

IN THE CLAIMS

Please amend claims 1, 2, 8, 9, 16-19, and 33 as follows.

1. (Currently Amended) A service gateway operable to
 - (i) connect at least one local client to an external network; and
 - (ii) hold at least one service module for providing a corresponding service,
wherein the service gateway includes a control mechanism configured to respond to a request for a first service provided by a service module not present at the service gateway by sending one or more messages to an external source until a response from the external source identifies a first service module within the gateway that is capable of providing the first service;
wherein the response received from the external source identifies a proposed service and includes an input stream comprising an encoded version of the first service module, wherein the proposed service is a service required to decode the encoded version of the first service module.
2. (Currently Amended) The service gateway of claim 1, further comprising a record that identifies service modules that are held by the service gateway, the record including a pointer to each of the service modules, wherein the control mechanism is operable to: react to a received request that identifies a first service module by:
 - accessing the record to determine if the first service module is held by the service gateway;
 - using the associated pointer included in the record to cause the first service module to provide a corresponding service if the first service module is held by the service gateway; and
 - if the first service module is not held by the service gateway, recursively requesting support from an external source until the record indicates that the first service module is held by the service gateway;

wherein requesting support from an external source comprises:

~~by sending a message to the external source that includes an~~
~~identification of the~~ until a response from the external
source identifies a first service module if the first service
~~module is not held by the service gateway; and~~
reacting to a response from the external source that includes an
input stream comprising an encoded version of the first
service module and identifies a second service module,
wherein the second service module is required to decode
the encoded version of the first service module by:
~~accessing the record to determine if the second service~~
~~module is held by the service gateway, decoding the~~
first service module; and
if the second service module is not held by the service
gateway:
~~using the associated pointer included in the record to cause~~
~~the second service module to provide the~~
~~corresponding service if the second service module~~
~~is held by the service gateway; and~~
~~requesting support from an~~ the external source ~~by sending a~~
~~message to the external source that includes an~~
~~identification of the second service module if the~~
until a response from the external source identifies a
second service module that is not held by the
service gateway.

3. (Previously Presented) The service gateway of claim 2, wherein the control mechanism is operable to:

react to a response from the external source that identifies a further service module by accessing the record to identify if the further service module is held by the service gateway and:

using the associated pointer included in the record to cause the further service module to provide the corresponding service if the further service module is held by the service gateway; and
requesting support from an external source by sending a message to the external source that includes an identification of the further service module if the further service module is not held by the service gateway.

4. (Previously Presented) The service gateway of claim 1, wherein the control mechanism is operable to compare successive responses from an external source to identify response duplication indicative of a recursive error.
5. (Previously Presented) The service gateway of claim 1, wherein the control mechanism reacts to the identification of a service module and associated data in a response from an external source by supplying the associated data to the identified service module, if held by the service gateway, for processing by the service module.
6. (Previously Presented) The service gateway of claim 1, wherein an external source is a service provider.
7. (Previously Presented) The service gateway of claim 1, wherein an external source is a service gateway operator.
8. (Currently Amended) A computer program comprising program code on a carrier medium, operable in a service gateway computer, the service gateway computer being operable to connect at least one local client to an external network, the program code being operable:
to support at least one service module at the service gateway for providing a corresponding service; and

to respond to a request for a first service provided by a service module not present at the service gateway by sending one or more messages to an external source until a response from the external source identifies a first service module within the gateway that is capable of providing the first service; wherein the response received from the external source identifies a proposed service and includes an input stream comprising an encoded version of the first service module, wherein the proposed service is a service required to decode the encoded version of the first service module.

9. (Currently Amended) The computer program of claim 8, the program code being further operable to:

maintain a record that identifies each service module held by the service gateway, the record including an associated pointer to each of the service modules;

react to a received request that identifies a first service module by:

accessing the record to determine if the first service module is held by the service gateway;

using the associated pointer included in the record to cause the first service module to provide a corresponding service if the first service module is held by the service gateway; and if the first service module is not held by the service gateway,

recursively requesting support from an external source until the record indicates that the first service module is held by the service gateway;

wherein requesting support from an external source comprises: by

sending a message to the external source that includes an identification of the until a response from the external source identifies a first service module if the first service module is not held by the service gateway; and

reacting to a response from the external source that includes an input stream comprising an encoded version of the first service module and

identifies a second service module wherein the second service module is required to decode the encoded version of the first service module by:

~~accessing the record to determine if the second service module is held by the service gateway, decoding the first service module; and~~

if the second service module is not held by the service gateway;

~~using the associated pointer included in the record to cause the second service module to provide the corresponding service if the second service module is held by the service gateway; and~~

~~requesting support from an the external source by sending a message to the external source that includes an identification of the second service module if the until a response from the external source identifies a second service module that is not held by the service gateway.~~

10. (Previously Presented) The computer program of claim 9, wherein the program code is operable to:

react to a response from the external source that identifies a further service module by accessing the record to identify if the further service module is held by the service gateway and:

using the associated pointer included in the record to cause the further service module to provide the corresponding service if the further service module is held by the service gateway; and

requesting support from an external source by sending a message to the external source that includes an identification of the further service module if the further service module is not held by the service gateway.

11. (Previously Presented) The computer program of claim 8, wherein the control mechanism is operable to compare successive responses from an external source to identify response duplication indicative of a recursive error.
12. (Previously Presented) The computer program of claim 8, wherein the computer code reacts to the identification of a service module and associated data in a response from an external source by supplying the associated data to the identified service module, if held by the service gateway, for processing by the service module.
13. (Previously Presented) The computer program of claim 8, wherein an external source is a service provider.
14. (Previously Presented) The computer program of claim 8, wherein an external source is a service gateway operator.
15. (Cancelled)
16. (Currently Amended) A service gateway system comprising a processor, a memory, and a computer program comprising program code held in said memory and operable to:
 - control said processor to connect at least one local client to an external network;
 - support at least one service module at the service gateway for providing a corresponding service; and
 - respond to a request for a first service provided by a service module not present at the service gateway by sending one or more messages to an external source until a response from the external source identifies a first service module within the gateway that is capable of providing the first service;

wherein the response received from the external source identifies a proposed service and includes an input stream comprising an encoded version of the first service module, wherein the proposed service is a service required to decode the encoded version of the first service module.

17. (Currently Amended) A service gateway system comprising a processor, a memory, and computer program code on a carrier medium, the system being configured to:
 - provide at least one service module for providing a corresponding service;
 - and
 - provide a control mechanism configured to respond to a request for a first service provided by a service module not present at the service gateway by sending one or more messages to an external source until a response from the external source identifies a first service module within the gateway that is capable of providing the first service;wherein the response received from the external source identifies a proposed service and includes an input stream comprising an encoded version of the first service module, wherein the proposed service is a service required to decode the encoded version of the first service module.
18. (Currently Amended) A method of servicing at least one local client connected to an external network via a service gateway, the method comprising:
 - holding at least one service module at the gateway for providing a corresponding service;
 - responding to a request for a first service provided by a service module not present at the service gateway by sending one or more messages to an external source until a response from the external source identifies a first

service module within the gateway that is capable of providing the first service;

wherein the response received from the external source identifies a proposed service and includes an input stream comprising an encoded version of the first service module, wherein the proposed service is a service required to decode the encoded version of the first service module.

19. (Currently Amended) The method of claim 18, further comprising:

maintaining a record in the service gateway that identifies each service module held by the service gateway, the record including an associated pointer to each of the service modules;

reacting to a request that identifies a first service module by:

accessing the record to determine if the first service module is held by the service gateway;

using the associated pointer included in the record to cause the first service module to provide a corresponding service if the first service module is held by the service gateway; and

if the first service module is not held by the service gateway, recursively requesting support from an external source until the record indicates that the first service module is held by the service gateway;

wherein requesting support from an external source comprises:

~~by sending a message to the external source that includes an identification of the~~ until a response from the external source identifies a first service module if the first service module is not held by the service gateway; and

reacting to a response from the external source that includes an input stream comprising an encoded version of the first service module and identifies a second service module, wherein the second service module is required to decode the encoded version of the first service module by:

~~accessing the record to determine~~if the second service module is held by the service gateway, decoding the first service module; and
if the second service module is not held by the service gateway:
~~using the associated pointer included in the record to cause the second service module to provide the corresponding service if the second service module is held by the service gateway; and~~
requesting support from an the external source by ~~sending a message to the external source that includes an identification of the second service module if the~~
until a response from the external source identifies a second service module that ~~is not~~ held by the service gateway.

20. (Previously Presented) The method of claim 19, further comprising:
reacting to a response from an external source that identifies a further service module by accessing the record to identify if the further service module is held by the service gateway and:
using the associated pointer to cause the further service module to provide the corresponding service if the further service module is held by the service gateway; and
requesting support from an external source by sending a message to the external source that includes an identification of the further service module if the further service module is not held by the service gateway.
21. (Previously Presented) The method of claim 18, further comprising comparing successive responses from an external source to identify response duplication indicative of a recursive error.

22. (Previously Presented) The method of claim 18, further comprising reacting to the identification of a service module and associated data in a response from an external source by supplying the associated data to the identified service module, if held by the service gateway, for processing by the service module.
23. (Previously Presented) The method of claim 18, further comprising requesting support from an external service provider if a given service module is not held by the service gateway.
24. (Previously Presented) The method of claim 18, further comprising requesting support from an external service gateway operator if a given service module is not held by the service gateway.
25. (Previously Presented) The service gateway of claim 1, wherein the control mechanism comprises service provisioning mechanism which includes at least:
 - a resolver responsive to a request from a requestor for a service to determine whether a requested service is provided by the service gateway;
 - a negotiator responsive to an indication from the resolver that a requested service is not provided by the service gateway to query an external source for identifying a further service for attempting to satisfy the service request;
 - and
 - at least one response engine for processing information provided by the external source in response to the negotiator query;wherein the negotiator is configured to interrogate the response received from the external source to attempt to identify a message protocol for the response, whereby the response engine selected is a response engine configured to process a message formatted in the identified protocol.

26. (Previously Presented) The service gateway of claim 25, including a record identifying a service module for performing a service provided at the service gateway.
27. (Previously Presented) The service gateway of claim 25, wherein the resolver is operable to respond to a request for a service by interrogating a service record to determine if the service is provided by the service gateway; and
if said service is provided by the service gateway, to identify to the requestor a service module for performing the service; and
if said service is not provided by the service gateway, to call the negotiator for querying an external source for the identity of a further service to attempt to satisfy the service request.
28. (Previously Presented) The service gateway of claim 25, wherein the negotiator is responsive to a call from the resolver to identify and query an external source for the identity of a further service to attempt to satisfy the service request.
29. (Previously Presented) The service gateway of claim 25,
wherein the service provisioning mechanism is operable within a support framework with each of the resolver, the negotiator and the response engine being services registered with the framework.
30. (Previously Presented) The computer program product of claim 8, wherein the computer code is operable to provide:
a resolver service responsive to a request from a requestor for a service to determine whether a requested service is provided by the service gateway;
a negotiator service responsive to an indication from the resolver service that a requested service is not provided by the service gateway to query an external source for the identity of a further service to attempt to satisfy the service request; and

at least one response engine for processing information provided by the external source in response to the negotiator service query;
wherein the negotiator is configured to interrogate the response received from the external source to attempt to identify a message protocol for the response, whereby the response engine selected is a response engine configured to process a message formatted in the identified protocol.

31. (Previously Presented) The computer program product of claim 31, wherein the record is a registry of services registered at the service gateway.
32. (Previously Presented) The method of claim 18, further comprising:
 - a) responding to a request from a requestor for a service to determine whether a requested service is provided by the service gateway;
 - b) where a requested service is not provided by the service gateway, querying an external source for identifying a further service for attempting to satisfy the service request; and
 - c) processing information provided by the external source in response to the query; and
 - d) interrogating the response received from the external source to attempt to identify a message protocol for the response, whereby the response engine selected is a response engine configured to process a message formatted in the identified protocol.
33. (Currently Amended) The method of claim 32, further comprising recursively repeating steps (a), (b) and (c) until a service is found that is supported by the service gateway.
34. (Previously Presented) The method of claim 32, wherein step (a) includes interrogating a service record to determine if a service is provided by the service gateway;

if said service is provided by the service gateway, identifying to a requestor a service module for performing the service; and
if said service is not provided by the service gateway, passing to step (b).

35. (Previously Presented) The method of claim 32, wherein step (b) includes identifying and querying an external source for the identity of a further service to attempt to satisfy the service request.